

# TECHNICAL DATA & SERVICE MANUAL

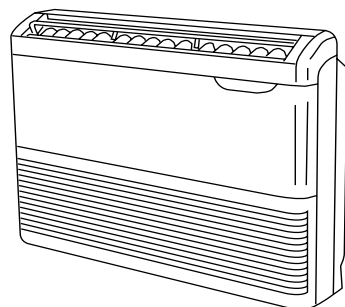
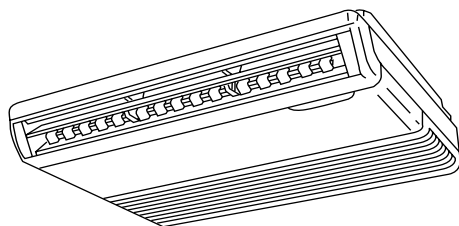


**INDOOR UNIT: KPSW2B5XAB  
KPSW3B5XAB  
KPSW4B5XAB**

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## SPLIT SYSTEM AIR CONDITIONER

| Model No.  | Product Code No. |
|------------|------------------|
| KPSW2B5XAB | 38.7105.970      |
| KPSW3B5XAB | 38.7105.971      |
| KPSW4B5XAB | 38.7105.972      |



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# 1. SPECIFICATIONS

## 1-1 Unit Specifications

### KPSW2B5XAB

|              |               |
|--------------|---------------|
| Power source | 230 V - 50 Hz |
|--------------|---------------|

| Performance                   |               |                   |               |
|-------------------------------|---------------|-------------------|---------------|
| Input                         |               | kW                | 0,040         |
| Running Amps                  |               | A                 | 0,19          |
| Total cooling capacity (1)    | High/Med./Low | kW                | 2,4/1,8/1,07  |
| Sensible cooling capacity (1) | High/Med./Low | kW                | 1,97/1,5/0,93 |
| Heating capacity (2)          | High/Med./Low | kW                | 3,48/2,7/1,84 |
| Air circulation               | High/Med./Low | m <sup>3</sup> /h | 415/300/200   |

| Features                                               |               |      |                                          |
|--------------------------------------------------------|---------------|------|------------------------------------------|
| Controls/Temperature controls                          |               |      | Microprocessor/ I.C. thermostat          |
| Control unit                                           |               |      | Wireless remote control unit             |
| Timer                                                  |               |      | ON/OFF 24 hours                          |
| Fan speed                                              |               |      | 3 and Auto                               |
| Airflow direction                                      |               |      | Auto (Remote control)                    |
| Water FLOW in cooling                                  | High/Med./Low | l/h  | 420/312/184                              |
| Pressure drop on water in cooling (1)                  | High/Med./Low | kPa  | 21,0/12,1/4,8                            |
| Pressure drop on water in heating (2)                  | High          | kPa  | 13                                       |
| Air Filter                                             |               |      | Washable, polypropylene, class HB (UL94) |
| Power noise level                                      | High/Med./Low | dB-A | 48/43/35                                 |
| Water tubing connections                               |               |      | 1/2" gas male                            |
| Air clean filter                                       |               |      | Optional                                 |
| 3-Way valve + By-pass (1/2 gas male, KVS 1,6, 230V NC) |               |      | Optional                                 |

| Dimensions & Weight |          |                |      |
|---------------------|----------|----------------|------|
| Unit dimensions     | Height   | mm             | 680  |
|                     | Width    | mm             | 900  |
|                     | Depth    | mm             | 190  |
| Package dimensions  | Height   | mm             | 770  |
|                     | Width    | mm             | 995  |
|                     | Depth    | mm             | 280  |
| Weight              | Net      | kg             | 23,5 |
|                     | Shipping | kg             | 31,5 |
| Shipping volume     |          | m <sup>3</sup> | 0,21 |

DATA SUBJECT TO CHANGE WITHOUT NOTICE

- (1) Air inlet 27°C (D.B.) / 19°C (W.B.); Water inlet 7°C; Water outlet 12°C  
 (2) Air inlet 20°C; Water inlet 50°C (same water capacity as in conditions (1))

### OPERATION LIMITS

Min. water inlet temperature 4°C

Max. water inlet temperature 60°C

Max. operating pressure of hydraulic circuit 16 bar

Min. air recirculation temperature 5°C

Max. air recirculation temperature 32°C

## KPSW3B5XAB

|              |               |
|--------------|---------------|
| Power source | 230 V - 50 Hz |
|--------------|---------------|

| Performance                   |               |                   |               |
|-------------------------------|---------------|-------------------|---------------|
| Input                         |               | kW                | 0,046         |
| Running Amps                  |               | A                 | 0,23          |
| Total cooling capacity (1)    | High/Med./Low | kW                | 3,19/2,4/1,13 |
| Sensible cooling capacity (1) | High/Med./Low | kW                | 2,47/1,8/0,95 |
| Heating capacity (2)          | High/Med./Low | kW                | 4,07/3,4/2,05 |
| Air circulation               | High/Med./Low | m <sup>3</sup> /h | 520/430/210   |

| Features                                              |               |      |                                          |
|-------------------------------------------------------|---------------|------|------------------------------------------|
| Controls/Temperature controls                         |               |      | Microprocessor/ I.C. thermostat          |
| Control unit                                          |               |      | Wireless remote control unit             |
| Timer                                                 |               |      | ON/OFF 24 hours                          |
| Fan speed                                             |               |      | 3 and Auto                               |
| Airflow direction                                     |               |      | Auto (Remote control)                    |
| Water capacity in cooling                             | High/Med./Low | l/h  | 550/413/191                              |
| Pressure drop on water in cooling (1)                 | High/Med./Low | kPa  | 26,6/19,9/4,4                            |
| Pressure drop on water in heating (2)                 | High          | kPa  | 23,7                                     |
| Air Filter                                            |               |      | Washable, polypropylene, class HB (UL94) |
| Power noise level                                     | High/Med./Low | dB-A | 50/45/35                                 |
| Water tubing connections                              |               |      | 1/2" gas male                            |
| Air clean filter                                      |               |      | Optional                                 |
| 3-Way valve + By-pass (1/2 gas male, KVS 1,6, 230 NC) |               |      | Optional                                 |

| Dimensions & Weight |          |                |      |
|---------------------|----------|----------------|------|
| Unit dimensions     | Height   | mm             | 680  |
|                     | Width    | mm             | 900  |
|                     | Depth    | mm             | 190  |
| Package dimensions  | Height   | mm             | 770  |
|                     | Width    | mm             | 995  |
|                     | Depth    | mm             | 280  |
| Weight              | Net      | kg             | 23,5 |
|                     | Shipping | kg             | 31,5 |
| Shipping volume     |          | m <sup>3</sup> | 0,21 |

DATA SUBJECT TO CHANGE WITHOUT NOTICE

- (1) Air inlet 27°C (D.B.) / 19°C (W.B.); Water inlet 7°C; Water outlet 12°C  
(2) Air inlet 20°C; Water inlet 50°C (same water capacity as in conditions (1))

### OPERATION LIMITS

Min. water inlet temperature 4°C

Max. water inlet temperature 60°C

Max. operating pressure of hydraulic circuit 16 bar

Min. air recirculation temperature 5°C

Max. air recirculation temperature 32°C

## KPSW4B5XAB

|              |               |
|--------------|---------------|
| Power source | 230 V - 50 Hz |
|--------------|---------------|

| Performance                   |               |                   |               |
|-------------------------------|---------------|-------------------|---------------|
| Input                         |               | kW                | 0,070         |
| Running Amps                  |               | A                 | 0,39          |
| Total cooling capacity (1)    | High/Med./Low | kW                | 3,6/3,0/1,77  |
| Sensible cooling capacity (1) | High/Med./Low | kW                | 3,06/2,5/1,48 |
| Heating capacity (2)          | High/Med./Low | kW                | 5,3/4,3/2,4   |
| Air circulation               | High/Med./Low | m <sup>3</sup> /h | 675/570/327   |

| Features                                              |               |      |                                          |
|-------------------------------------------------------|---------------|------|------------------------------------------|
| Controls/Temperature controls                         |               |      | Microprocessor/ I.C. thermostat          |
| Control unit                                          |               |      | Wireless remote control unit             |
| Timer                                                 |               |      | ON/OFF 24 hours                          |
| Fan speed                                             |               |      | 3 and Auto                               |
| Airflow direction                                     |               |      | Auto (Remote control)                    |
| Water capacity in cooling                             | High/Med./Low | l/h  | 617/520/309                              |
| Pressure drop on water in cooling (1)                 | High/Med./Low | kPa  | 25,8/19/7,4                              |
| Pressure drop on water in heating (2)                 | High          | kPa  | 25,8                                     |
| Air Filter                                            |               |      | Washable, polypropylene, class HB (UL94) |
| Power noise level                                     | High/Med./Low | dB-A | 54/51/40                                 |
| Water tubing connections                              |               |      | 1/2" gas male                            |
| Air clean filter                                      |               |      | Optional                                 |
| 3-Way valve + By-pass (1/2 gas male, KVS 1,6, 230 NC) |               |      | Optional                                 |

| Dimensions & Weight |          |                |      |
|---------------------|----------|----------------|------|
| Unit dimensions     | Height   | mm             | 680  |
|                     | Width    | mm             | 900  |
|                     | Depth    | mm             | 190  |
| Package dimensions  | Height   | mm             | 770  |
|                     | Width    | mm             | 995  |
|                     | Depth    | mm             | 280  |
| Weight              | Net      | kg             | 23,5 |
|                     | Shipping | kg             | 31,5 |
| Shipping volume     |          | m <sup>3</sup> | 0,21 |

DATA SUBJECT TO CHANGE WITHOUT NOTICE

- (1) Air inlet 27°C (D.B.) / 19°C (W.B.); Water inlet 7°C; Water outlet 12°C  
(2) Air inlet 20°C; Water inlet 50°C (same water capacity as in conditions (1))

### OPERATION LIMITS

Min. water inlet temperature 4°C

Max. water inlet temperature 60°C

Max. operating pressure of hydraulic circuit 16 bar

Min. air recirculation temperature 5°C

Max. air recirculation temperature 32°C

## 1-2 Major Component Specifications

### KPSW2B5XAB

| Controller PCB           |  |                |
|--------------------------|--|----------------|
| Part No.                 |  | SAC ON-OFF IDU |
| Controls                 |  | Microprocessor |
| Control circuit fuse     |  | 250 V - 3,15 A |
| Jumper setting JP1...JP5 |  | 2,54mm-5pcs    |

|                     |           |
|---------------------|-----------|
| Remote Control Unit | SAC W-REM |
|---------------------|-----------|

| Fan & Fan Motor                        |                      |    |  |                                                                                     |
|----------------------------------------|----------------------|----|--|-------------------------------------------------------------------------------------|
| Type                                   |                      |    |  | Cross - flow                                                                        |
| Q'ty ..... Dia. and lenght             | mm                   |    |  | 2.... Ø 130 / L 180                                                                 |
| Fan motor model...Q'ty                 |                      |    |  | K35406-M02046 ...1                                                                  |
| No. Of poles...rpm (230 V, High)       |                      |    |  | 4... 1040                                                                           |
| Running Amps                           | A                    |    |  | 0,17                                                                                |
| Power input                            | W                    |    |  | 37                                                                                  |
| Coil resistance (Ambient temp. 25 °C ) | Ω                    |    |  | GRY-PNK: 150,7<br>GRY-WHT: 605<br>WHT-VLT: 130,4<br>VLT-ORG: 66,5<br>ORG-YEL: 150,4 |
| Safety devices                         | Type                 |    |  | Internal thermal protector                                                          |
|                                        | Operating temp. Open | °C |  | 150 ± 5                                                                             |
|                                        | Close                | °C |  | Automatic reclosing                                                                 |
| Run capacitor                          | μF                   |    |  | 1,2                                                                                 |
|                                        | VAC                  |    |  | 440                                                                                 |

| Flap Motor                             |   |                |
|----------------------------------------|---|----------------|
| Type                                   |   | Stepping motor |
| Model                                  |   | MP24Z2         |
| Rating                                 |   | DC 12 V        |
| Coil resistance (Ambient temp. 25 °C ) | Ω | 400 ± 7%       |

| Heat Exch. Coil   |                |                                   |
|-------------------|----------------|-----------------------------------|
| Coil              |                | Aluminium plate fin / Copper tube |
| Rows              |                | 2                                 |
| Fin pitch         | mm             | 1,4                               |
| Face area         | m <sup>2</sup> | 0,178                             |
| Quantity of water | l              | 1,00                              |

DATA SUBJECT TO CHANGE WITHOUT NOTICE

**KPSW3B5XAB**

| <b>Controller PCB</b>    |  |                |
|--------------------------|--|----------------|
| Part No.                 |  | SAC ON-OFF IDU |
| Controls                 |  | Microprocessor |
| Control circuit fuse     |  | 250 V - 3,15 A |
| Jumper setting JP1...JP5 |  | 2,54mm-5pcs    |

|                            |           |
|----------------------------|-----------|
| <b>Remote Control Unit</b> | SAC W-REM |
|----------------------------|-----------|

| <b>Fan &amp; Fan Motor</b>             |                         |                                                                                                                |
|----------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------|
| Type                                   |                         | Cross - flow                                                                                                   |
| Q'ty ..... Dia. and lenght             | mm                      | 2.... Ø 130 / L 180                                                                                            |
| Fan motor model...Q'ty                 |                         | K48407-MO1596 ...1                                                                                             |
| No. Of poles...rpm (230 V, High)       |                         | 4... 1250                                                                                                      |
| Running Amps                           | A                       | 0,29                                                                                                           |
| Power input                            | W                       | 65                                                                                                             |
| Coil resistance (Ambient temp. 25 °C ) | Ω                       | GRY-WHT: 194 ÷ 223<br>WHT-PNK: 238 ÷ 274<br>WHT-VLT: 80,1 ÷ 92,2<br>VLT-ORG: 80,1 ÷ 92,2<br>ORG-YEL: 200 ÷ 230 |
| Safety devices                         | Type                    | Internal thermal protector                                                                                     |
|                                        | Operating temp. Open °C | 145 ± 5K                                                                                                       |
|                                        | Close °C                | Automatic reclosing                                                                                            |
| Run capacitor                          | μF                      | 1,5                                                                                                            |
|                                        | VAC                     | 450                                                                                                            |

| <b>Flap Motor</b>                      |   |                |
|----------------------------------------|---|----------------|
| Type                                   |   | Stepping motor |
| Model                                  |   | MP24Z2         |
| Rating                                 |   | DC 12 V        |
| Coil resistance (Ambient temp. 25 °C ) | Ω | 400 ± 7%       |

| <b>Heat Exch. Coil</b> |                |                                   |
|------------------------|----------------|-----------------------------------|
| Coil                   |                | Aluminium plate fin / Copper tube |
| Rows                   |                | 2                                 |
| Fin pitch              | mm             | 1,4                               |
| Face area              | m <sup>2</sup> | 0,178                             |
| Quantity of water      | l              | 1,00                              |

DATA SUBJECT TO CHANGE WITHOUT NOTICE

**KPSW4B5XAB**

| <b>Controller PCB</b>    |  |                |
|--------------------------|--|----------------|
| Part No.                 |  | SAC ON-OFF IDU |
| Controls                 |  | Microprocessor |
| Control circuit fuse     |  | 250 V - 3,15 A |
| Jumper setting JP1...JP5 |  | 2,54mm-5pcs    |

|                            |           |
|----------------------------|-----------|
| <b>Remote Control Unit</b> | SAC W-REM |
|----------------------------|-----------|

| <b>Fan &amp; Fan Motor</b>             |                         |                                                                                                                |
|----------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------|
| Type                                   |                         | Cross - flow                                                                                                   |
| Q'ty ..... Dia. and lenght             | mm                      | 2.... Ø 130 / L 180                                                                                            |
| Fan motor model...Q'ty                 |                         | K48410-MO1598 ...1                                                                                             |
| No. Of poles...rpm (230 V, High)       |                         | 4... 1350                                                                                                      |
| Running Amps                           | A                       | 0,41                                                                                                           |
| Power input                            | W                       | 88                                                                                                             |
| Coil resistance (Ambient temp. 25 °C ) | Ω                       | GRY-WHT: 124 ÷ 144<br>WHT-PNK: 255 ÷ 294<br>WHT-VLT: 69,3 ÷ 79,8<br>VLT-ORG: 69,3 ÷ 79,8<br>ORG-YEL: 200 ÷ 233 |
| Safety devices                         | Type                    | Internal thermal protector                                                                                     |
|                                        | Operating temp. Open °C | 145 ± 5K                                                                                                       |
|                                        | Close °C                | Automatic reclosing                                                                                            |
| Run capacitor                          | μF                      | 2,0                                                                                                            |
|                                        | VAC                     | 450                                                                                                            |

| <b>Flap Motor</b>                      |   |                |
|----------------------------------------|---|----------------|
| Type                                   |   | Stepping motor |
| Model                                  |   | MP24Z2         |
| Rating                                 |   | DC 12 V        |
| Coil resistance (Ambient temp. 25 °C ) | Ω | 400 ± 7%       |

| <b>Heat Exch. Coil</b> |                |                                   |
|------------------------|----------------|-----------------------------------|
| Coil                   |                | Aluminium plate fin / Copper tube |
| Rows                   |                | 2                                 |
| Fin pitch              | mm             | 1,4                               |
| Face area              | m <sup>2</sup> | 0,178                             |
| Quantity of water      | l              | 1,00                              |

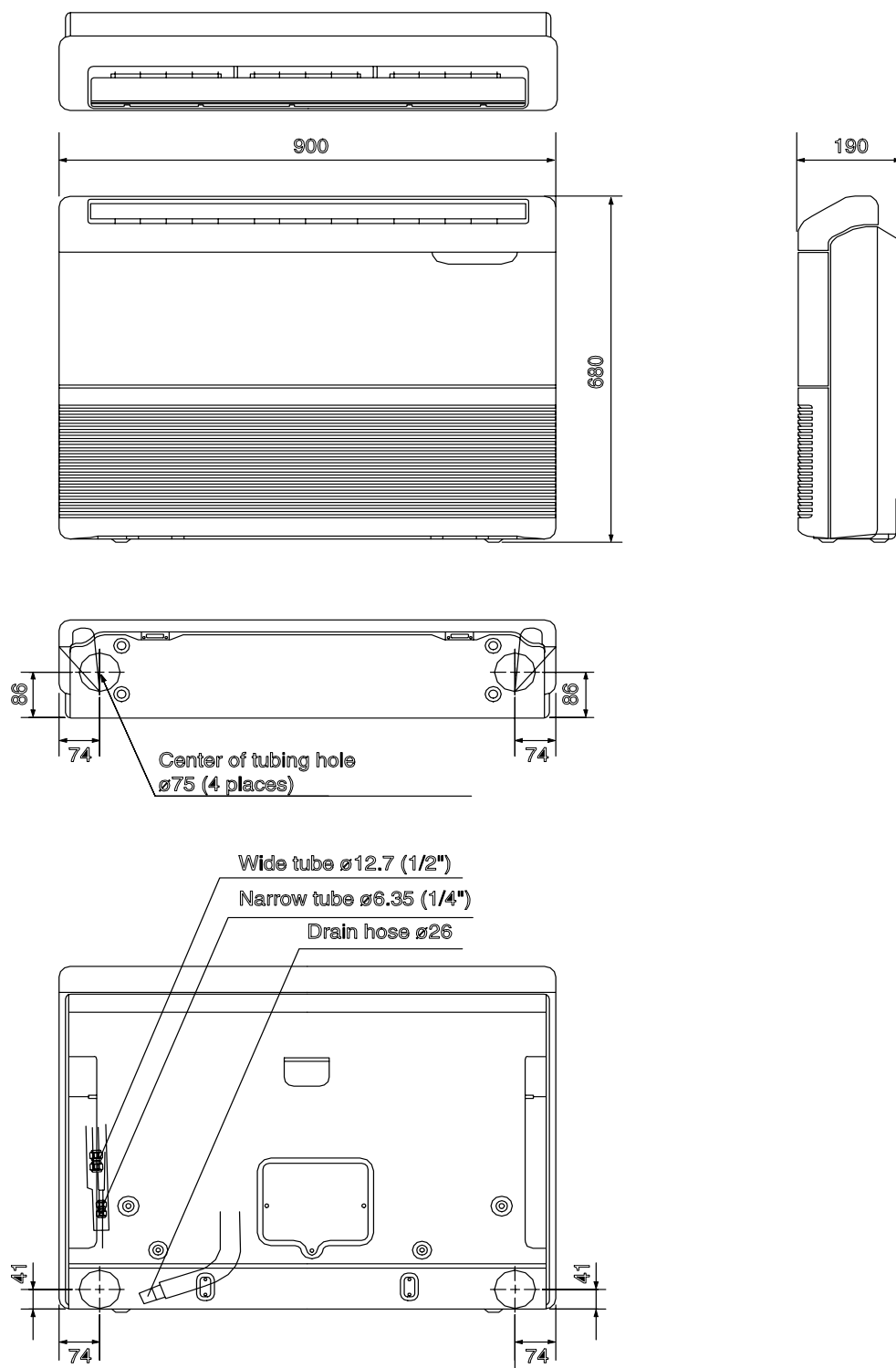
DATA SUBJECT TO CHANGE WITHOUT NOTICE

## 1-3 Other Component Specifications

| Thermistor ( Coil sensor TH1) |            |
|-------------------------------|------------|
| Resistance                    | KΩ 10 ± 3% |

| Thermistor ( Room sensor ) |                               |
|----------------------------|-------------------------------|
| Resistance                 | kΩ NTC-THERMISTOR 10 at 25 °C |

## 2. DIMENSIONAL DATA

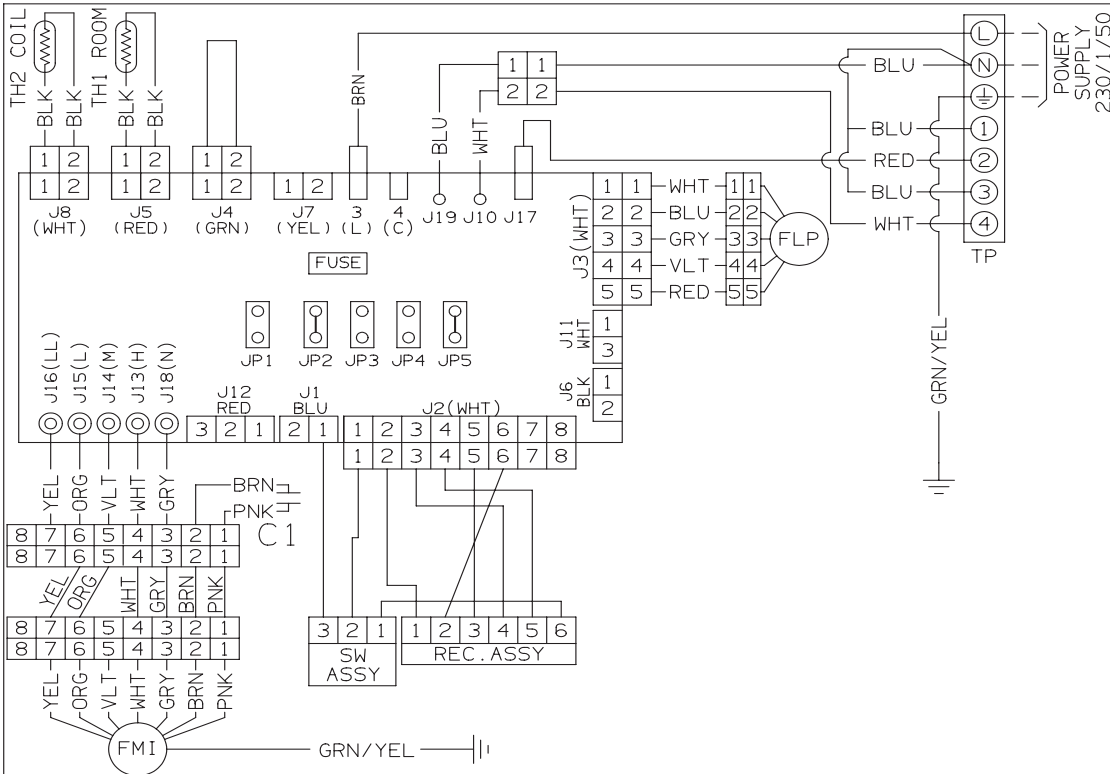


### 3-1 Electric Wiring Diagrams

**KPSW2B5XAB      KPSW4B5XAB**

# ELECTRIC WIRING DIAGRAM

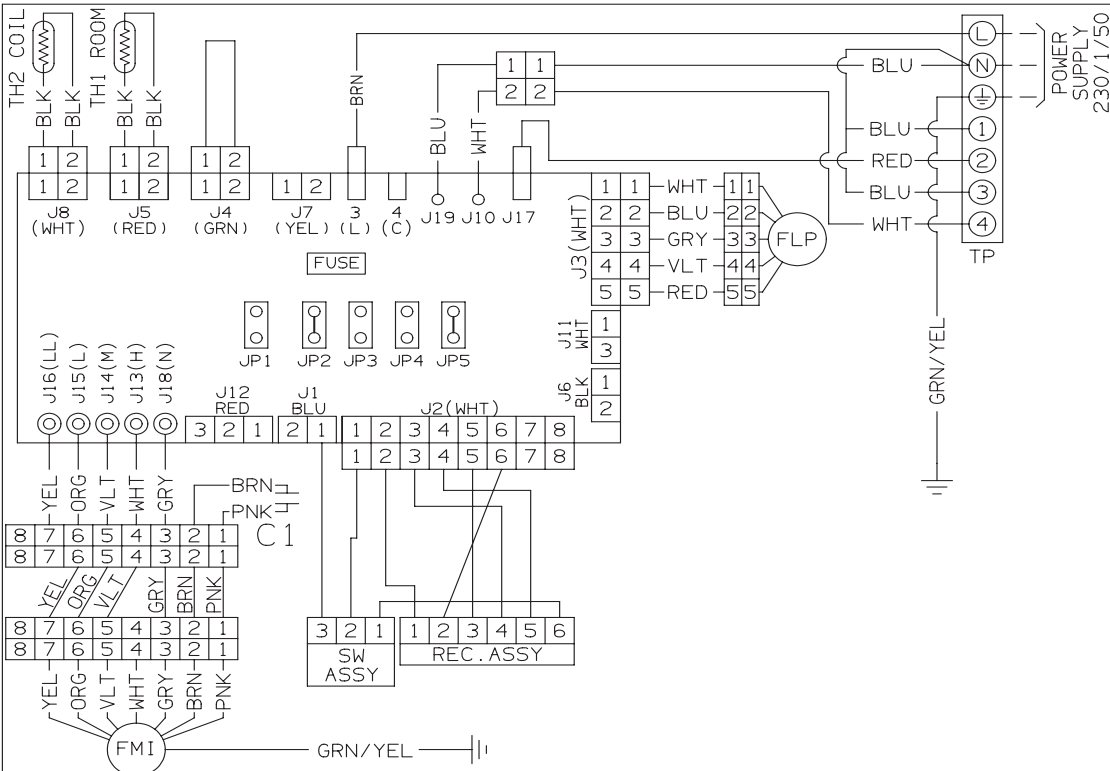
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**KPSW3B5XAB**

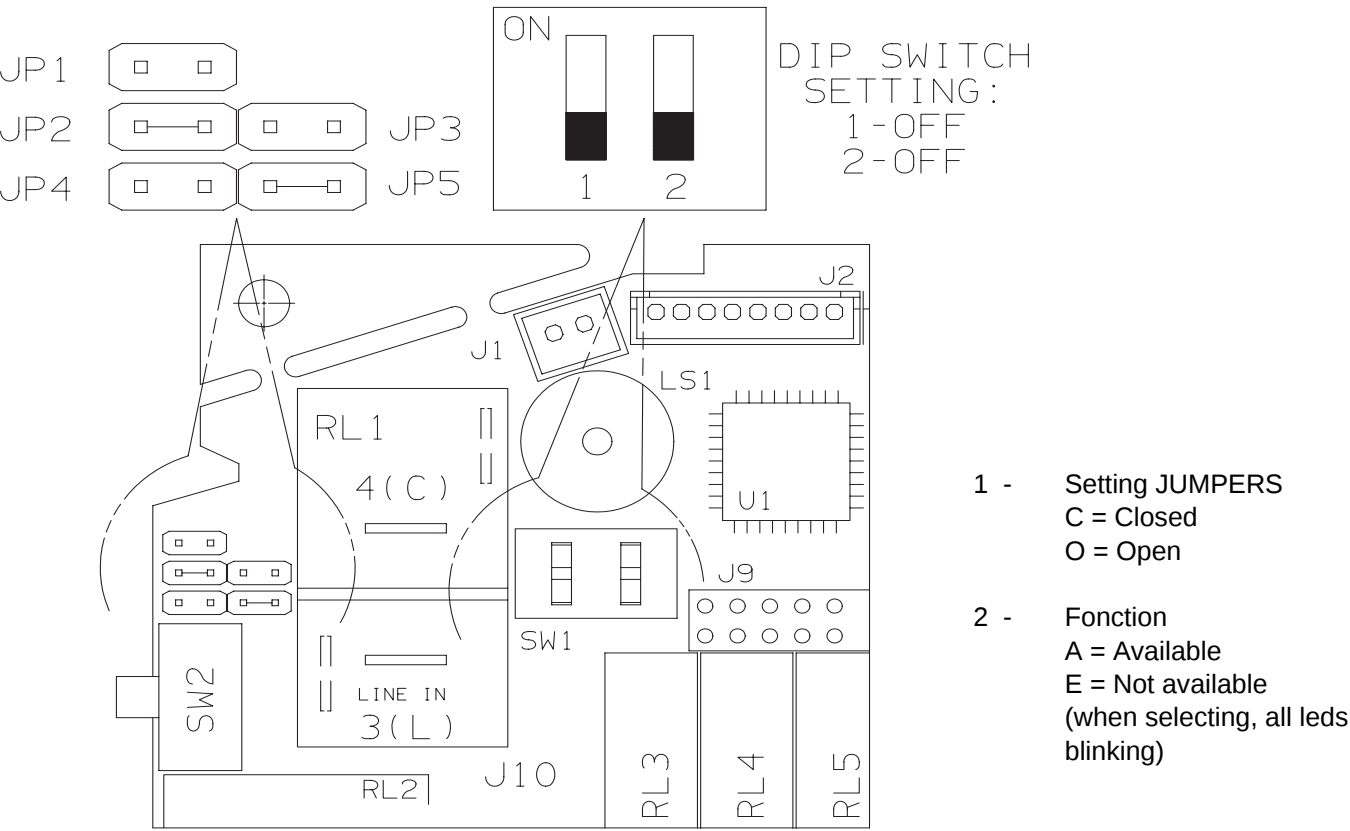
# ELECTRIC WIRING DIAGRAM

37-3159-238-01



3-2 JUMPERS CONFIGURATION

Jumpers are located on the indoor PCB near the MODE button.

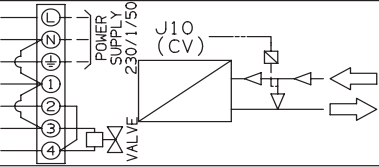


NOTE: settings different from the factory one must be done by special worker

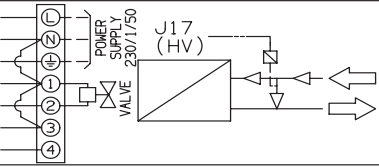
FACTORY SYSTEM CONFIGURATION:COOLING ONLY WITH VALVE

| COOLING ONLY SYSTEM | FUNCTIONS |   |   |   |          | JUMPERS |     |     |     |     |
|---------------------|-----------|---|---|---|----------|---------|-----|-----|-----|-----|
|                     |           |   |   |   | FAN ONLY | JP1     | JP2 | JP3 | JP4 | JP5 |
|                     | A         | E | E | A | A        | O       | C   | O   | O   | C   |

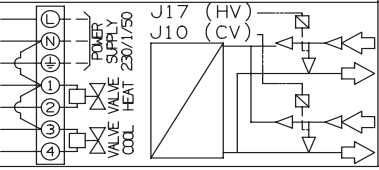
SYSTEM CONFIGURATION:COOLING OR HEATING WITH VALVE

| COOLING ONLY<br>SYSTEM                                                            | FUNCTIONS                                                                         |                                                                                   |                                                                                   |                                                                                   |             | JUMPERS |     |     |     |     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|---------|-----|-----|-----|-----|
|                                                                                   |  |  |  |  | FAN<br>ONLY | JP 1    | JP2 | JP3 | JP4 | JP5 |
|  | A                                                                                 | A                                                                                 | E                                                                                 | A                                                                                 | A           | 0       | 0   | 0   | 0   | C   |

SYSTEM CONFIGURATION:HEATING ONLY WITH VALVE

| COOLING ONLY<br>SYSTEM                                                             | FUNCTIONS                                                                         |                                                                                   |                                                                                   |                                                                                   |             | JUMPERS |     |     |     |     |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|---------|-----|-----|-----|-----|
|                                                                                    |  |  |  |  | FAN<br>ONLY | JP 1    | JP2 | JP3 | JP4 | JP5 |
|  | E                                                                                 | A                                                                                 | E                                                                                 | E                                                                                 | A           | 0       | 0   | 0   | 0   | 0   |

SYSTEM CONFIGURATION:COOLING WITH VALVE OR HEATING WITH VALVE

| COOLING ONLY<br>SYSTEM                                                              | FUNCTIONS                                                                           |                                                                                     |                                                                                     |                                                                                     |             | JUMPERS |     |     |     |     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|---------|-----|-----|-----|-----|
|                                                                                     |  |  |  |  | FAN<br>ONLY | JP 1    | JP2 | JP3 | JP4 | JP5 |
|  | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A           | 0       | 0   | 0   | 0   | C   |

## 3-3 CONTACTS FOR BUILDING AUTOMATION

### 3-3.1 INPUT CONTACT (J4 - green)

The status of this input affects system operation according to the following:

- Contact OPEN : system does not operate (always OFF) – inputs from wireless remote controller are not processed
- Contact CLOSED: system operates in the normal way according to the inputs coming from wireless remote controller

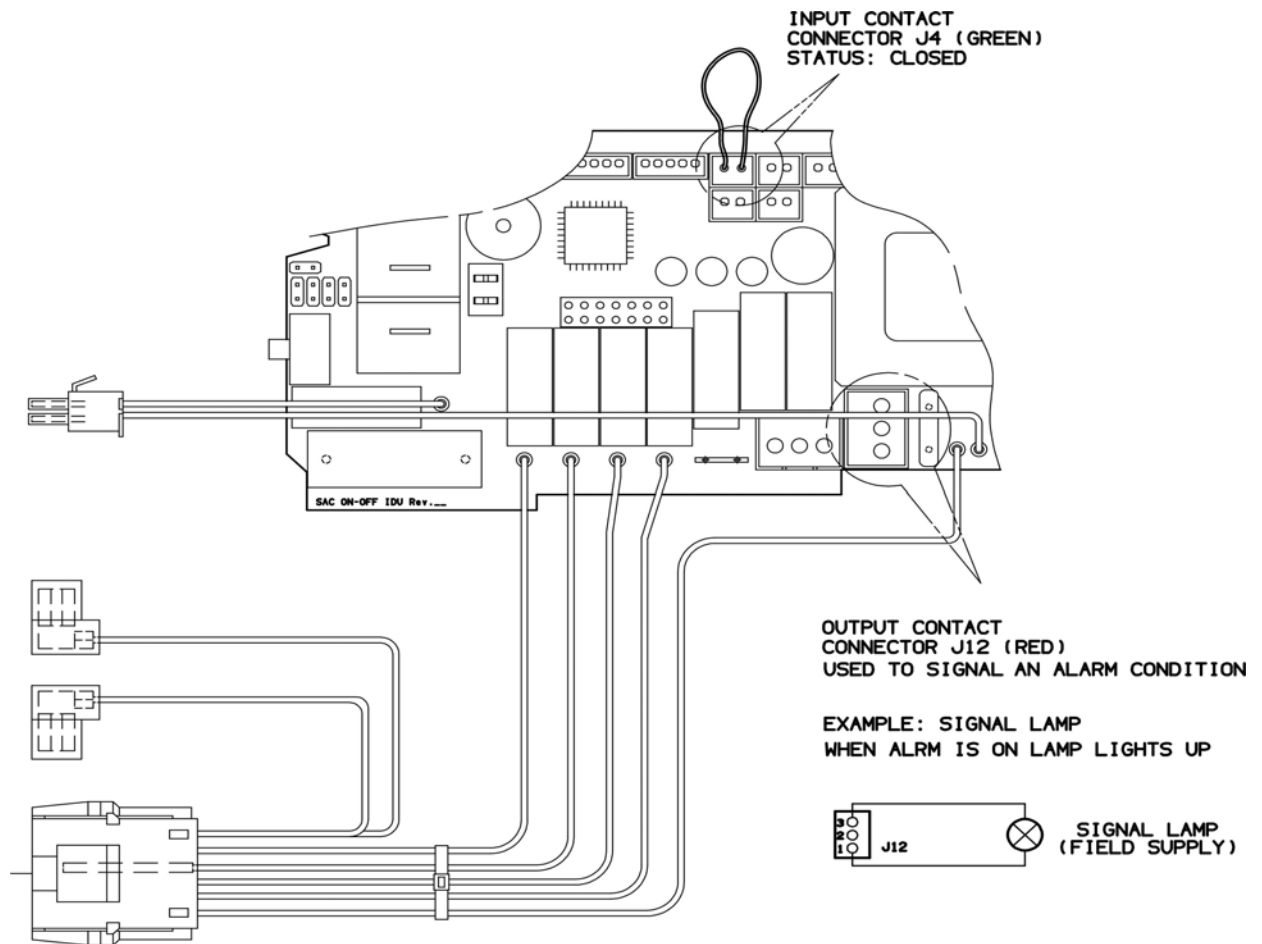
### 3-3.2 OUTPUT CONTACT (J12)

This connector is directly tied to the contact (normally open) of a power relay which activates every time the following alarm condition occur:

- RAT damaged
- ICT damaged

In this case when alarm happens, on poles 1 and 3 of J12 connector, 220 VAC-50Hz are available.

Max electrical load: **1A- 240VAC**



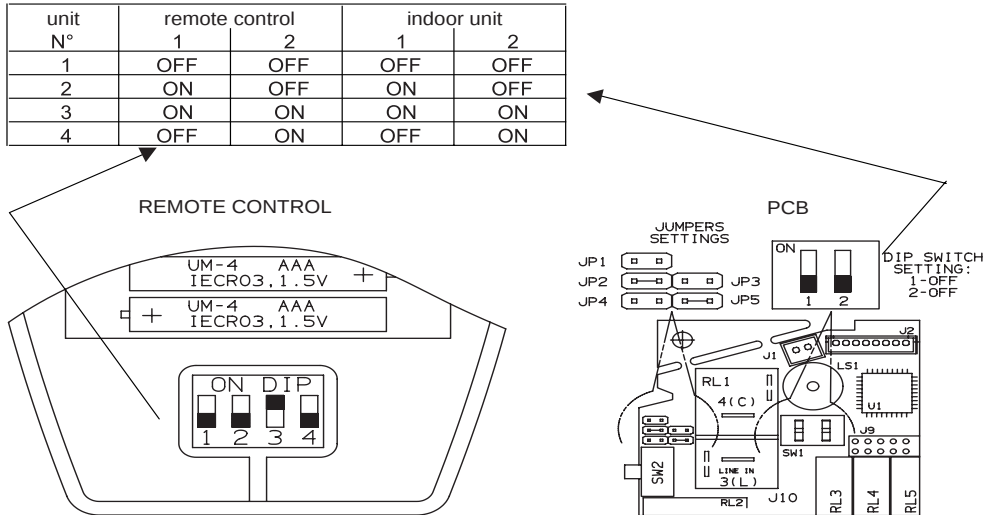
### 3-4 MAINTENANCE

#### Changing the Address of the Air Conditioner

In case of more than one air conditioner operating in the same room, it may be necessary to assign an address to each unit in order to avoid operation conflicts. Address is set acting on the dip-switches located on the indoor PCB and on the remote controller. The PCB settings must match the corresponding ones on the wireless remote controller.

#### How to change address of the air conditioner

Dip switch is located on the indoor PCB near the buzzer.  
Set the PCB to the address desired



As default switches SW1 and SW2 are in off status (PCB factory state).

#### How to change address on Remote Control Unit

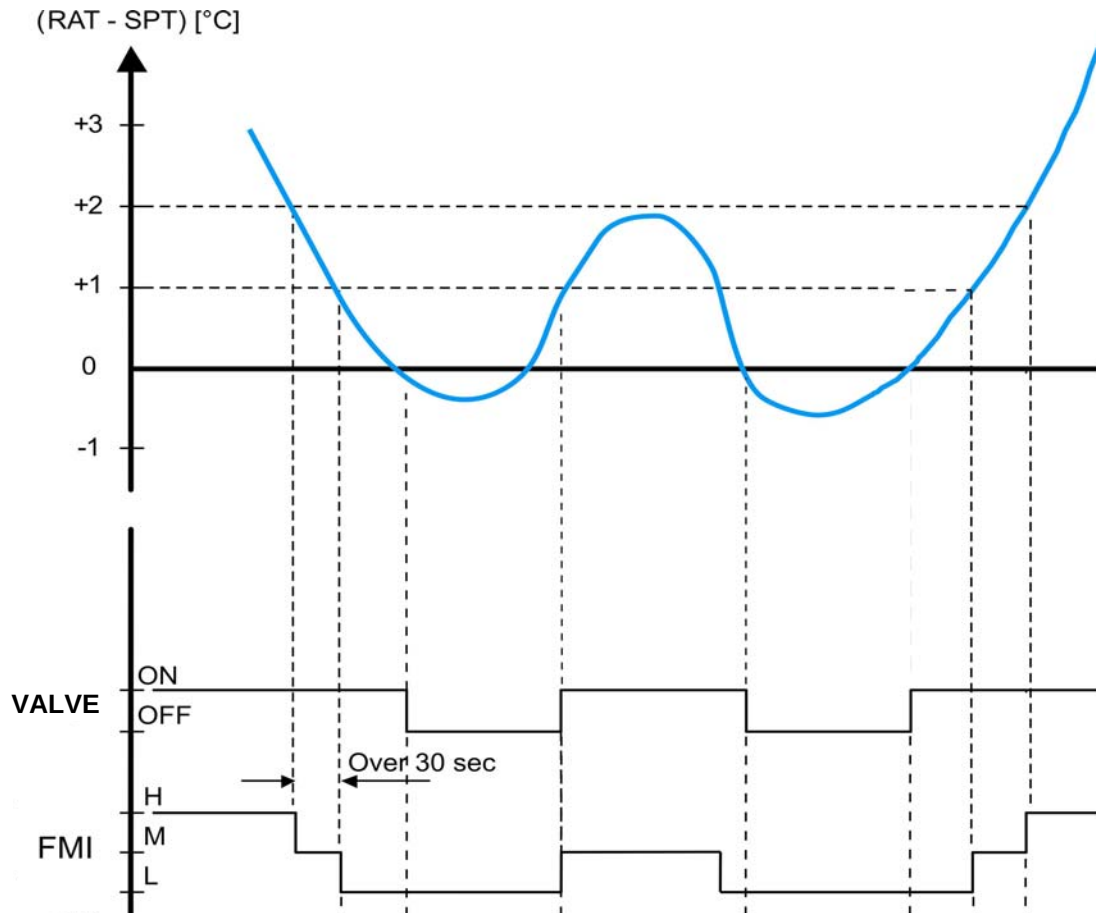
Dip switch is located on the battery compartment.

- 1) Pull out the door and remove the batteries.
- 2) Set the switch SW1 and SW2 according to the indoor PCB settings (do not act on SW3 and SW4)
- 3) Insert the batteries and pull on the door

As default switches SW1 and SW2 are in off status (remote controller factory state).

## 4.FUNCTION

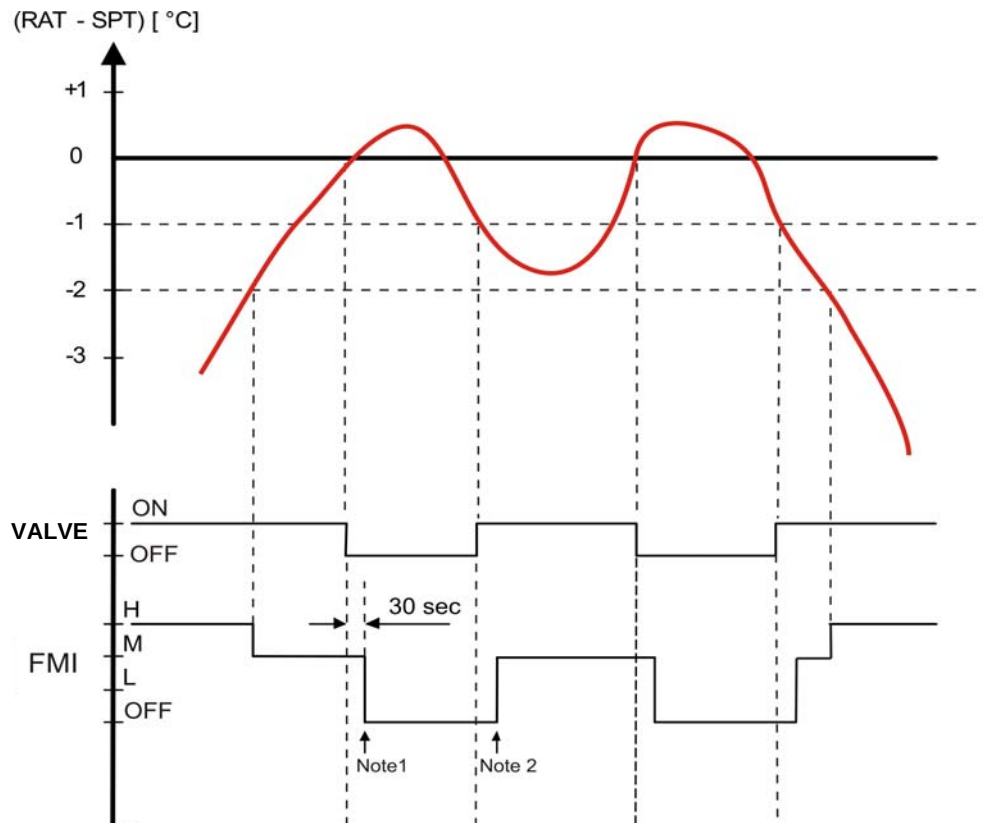
### 4-1 Cool Mode Operation



#### NOTES

1. In this graph, the FMI is operating with the "Auto Fan Speed" setting. If the user has selected the Low, Medium or High fan speed, the FMI will run at that speed only.
2. The indoor fan can change speed only after it has operated at the same speed for 30 sec if in AUTO and 1 sec for the other settings (High, Med, Low).

## 4-2 Heat Mode Operation

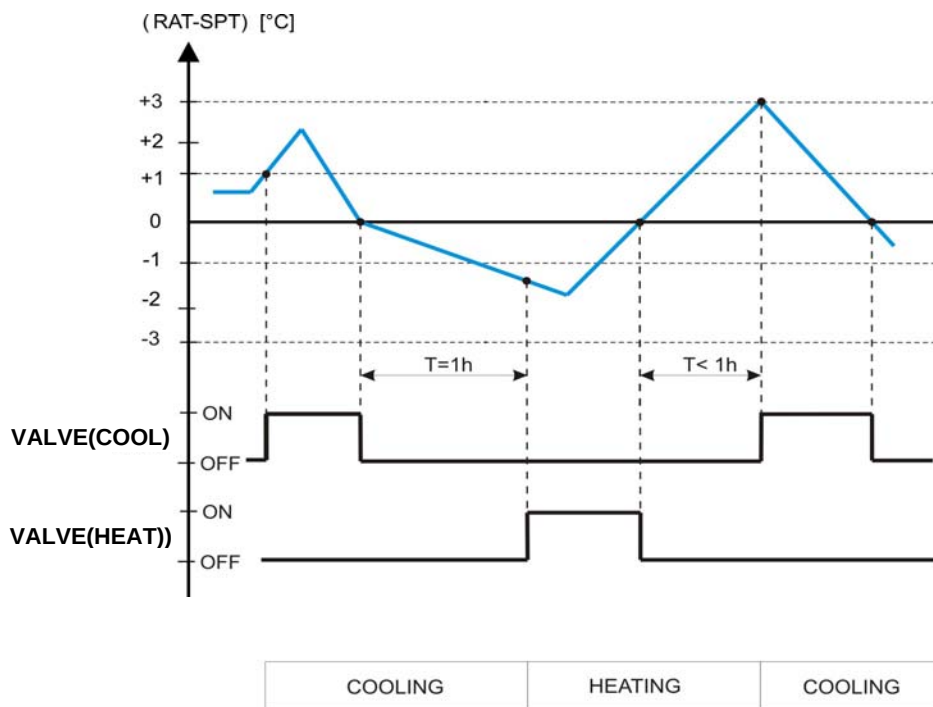


The Heating mode operation is similar to the Cooling mode operation. The VALVE and FMI are mainly controlled by the value of  $(RAT - SPT)$ . In the graph above, the FMI is operating in AUTO speed mode. Therefore, the FMI speed changes automatically according to the  $(RT - SPT)$ .

### NOTES

1. After VALVE is switched off, the FMI runs for 30s in order to purge heat from the indoor coil.
2. The FMI will not be turned on until the indoor coil temperature is warm enough to prevent the supply of cool air (see COLD DRAFT PREVENTION mode for details). The indoor fan can change speed only after it has operated at the same speed for 30 sec if in AUTO and 1 sec for the other settings (High, Med, Low).

### 4-3 Auto (cool/heat) Mode Operation



In Auto Mode, the unit switches automatically between the Auto Cooling and Auto Heating in order to maintain the room temperature (RAT) at the prescribed set point (SPT).  
The switching between the two modes is according to the above graph.  
Refer to the sections 5.1 COOLING MODE and 5.2 HEATING MODE for system operation details.

## 4-4 Dry Mode Operation

Dry operation remove moisture from indoor air running, in cooling mode, at a low level without reducing the ambient temperature. This is done cycling ON and OFF indoor and outdoor units according to below.

| ROOM TEMP                                                                   | DRY LEVEL    | JP4 OPEN                                    | JP4 CLOSED                                  |
|-----------------------------------------------------------------------------|--------------|---------------------------------------------|---------------------------------------------|
| $\geq \text{SPT} + 2^{\circ}\text{C}$                                       | LEVEL 0      | Operation according to COOLING mode         | Operation according to COOLING mode         |
| $< \text{SPT} + 2^{\circ}\text{C}$<br>$\geq \text{SPT} - 1^{\circ}\text{C}$ | LEVEL 1      | CM off                                      | CM off                                      |
|                                                                             |              | FMO on                                      | FMO off                                     |
|                                                                             |              | FMI runs at LOW speed<br>RV off             | FMI runs at LOW speed<br>RV off             |
| $< \text{SPT} - 1^{\circ}\text{C}$<br>$\geq 15^{\circ}\text{C}$             | LEVEL 2      | CM off                                      | CM off                                      |
|                                                                             |              | FMO switches 3 minutes on and 9 minutes off | FMO off                                     |
|                                                                             |              | FMI switches LL and L during FMO operation  | FMI switches LL and L (3 MIN. on and 9 OFF) |
|                                                                             |              | RV off                                      | RV off                                      |
| $< 15^{\circ}\text{C}$                                                      | DRY OFF ZONE | CM off                                      | CM off                                      |
|                                                                             |              | FMO off                                     | FMO off                                     |
|                                                                             |              | FMI off                                     | FMI off                                     |
|                                                                             |              | RV off                                      | RV off                                      |

SPT = Set Point Temperature

## 4-5 Fan Mode Operation

With this mode, the indoor fan is turned on while cooling and heating valve stay off all the time. The user can select between 3 speeds: HIGH, MEDIUM and LOW.

## 4-6 Auto Fan speed

With this option selected, the indoor fan speed changes automatically according to the difference between the detected air temperature (RAT sensor) and the set point (SPT):

### COOLING MODE

|                                          |              |
|------------------------------------------|--------------|
| $2 \leq (\text{RAT} - \text{SPT})$ :     | HIGH speed   |
| $1 \leq (\text{RAT} - \text{SPT}) < 2$ : | MEDIUM speed |
| $(\text{RAT} - \text{SPT}) < 1$ :        | LOW speed    |

### HEATING MODE

|                                      |              |
|--------------------------------------|--------------|
| $2 \leq (\text{SPT} - \text{RAT})$ : | HIGH speed   |
| $(\text{SPT} - \text{RAT}) < 2$ :    | MEDIUM speed |

### NOTE

SPT = Set Point Temperature

## 4-7 Forced Mode

In this mode the system operates (COOLING or HEATING mode – fixed settings) or is switched off by means of the MODE button of the indoor unit control board. The operation modes can be selected pressing the button in a cyclic way (OFF ⇒ COOL ⇒ HEAT ⇒ OFF...). The settings are:

### COOLING mode

SET POINT temperature = 25°C

FAN SPEED = HIGH

### HEATING mode

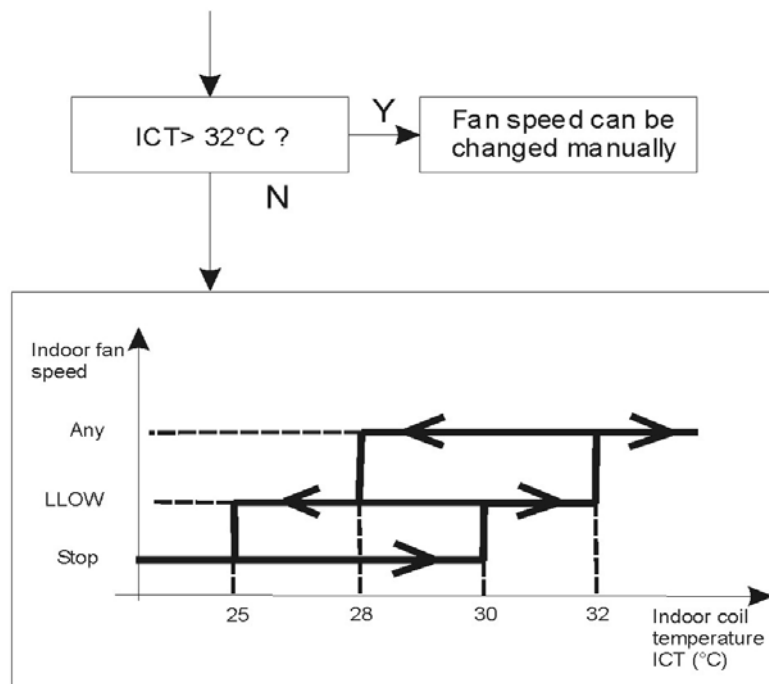
SET POINT temperature = 21°C

FAN SPEED = HIGH

## 4-8 Protection operations in Heat Mode

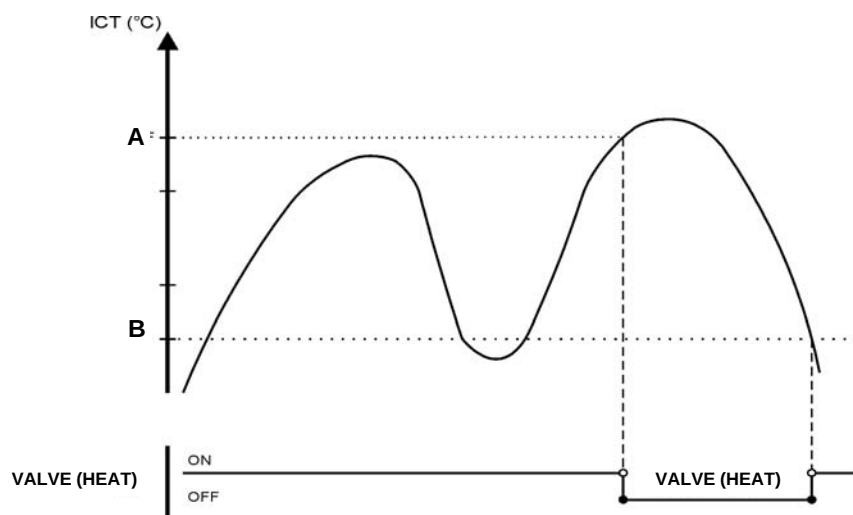
### 5-8.1 Cold draft

This feature prevents the supply of cold air forcing the indoor fan to a speed which cannot be changed by the user. As soon as the protection mode is exited speed can be changed manually through the remote controller. The protection acts in the following



#### 4-8.2 Overheat

This feature prevents the build up of high pressure in the indoor heat exchanger during heating operation



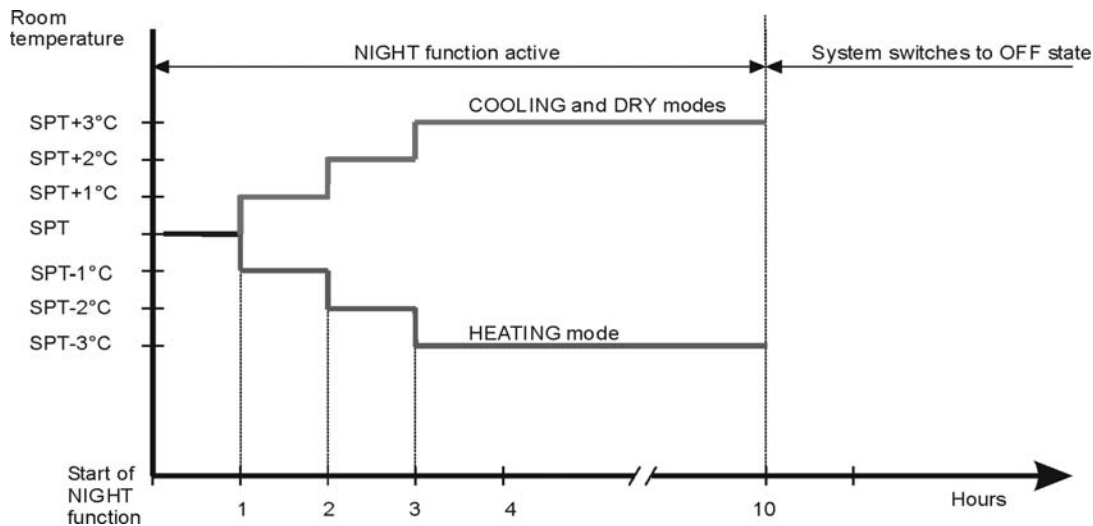
|        |    |
|--------|----|
| A (°C) | 65 |
| B (°C) | 55 |

## 4-9 I FEEL Function

As standard configuration the air conditioner operates detecting the room temperature through the sensor equipped in the wireless remote controller (icon I FEEL shown on the display). This feature provides a personalised environment since the temperature can be detected where the remote controller is located. It is possible to de-activate this option pressing the I FEEL button on the remote controller. In this case the I FEEL icon is no longer displayed and room temperature is detected through the sensor included in the indoor unit.

## 4-10 NIGHT Function

When this function is active, room temperature changes automatically to compensate for body temperature variations while sleeping. After 10 hours of operation system switches automatically to OFF state. This mode of operation is available both in COOLING and HEATING mode.



## 4-11 Diagnostic

With this feature is possible to have a visual signal that a trouble is occurring.  
This mode is always active and the signalling is made through the display board LEDS .  
In case of no troubles the LEDS status follows its normal function.

### NOTES

- The troubles are showed according a priority list that is in case of more than one trouble present, is always showed, at first, the one with the highest priority (1 ⇒ 2⇒ 3 etc).
- Sensor damaged means a situation where sensor is short-circuited or opened.
- In case of damaged sensors, the system (CM, FMO, FMI etc), if in OFF state, does not start.

| Priority | TROUBLE                | LEDS status |          |            | Effects                 |
|----------|------------------------|-------------|----------|------------|-------------------------|
|          |                        | LD1(stby)   | LD2(opr) | LD3(timer) |                         |
| 2        | RAT damaged            | F           | O        | O          | System does not operate |
| 3        | ICT damaged            | F           | F        | O          |                         |
| 4        | WRONG MODE<br>SELECTED | F           | F        | F          | System does not operate |

O = LED off

● = LED on

F = LED blinking

WARNING: Priority 4 only for COOLING

# 5 CHECKING ELECTRICAL COMPONENTS

## 5-1 Measurement of Insulation Resistance

The insulation is in good condition if the resistance exceeds 1 MOhm

### a) Power Supply Wires

Clamp the earthed wire of the power supply wires with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires (fig.1).

Then measure the resistance between the earthed wire and the other power wires (fig.1).

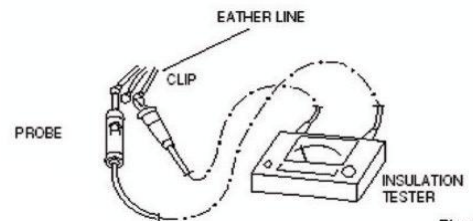


Fig. 1

### b) Unit

Clamp an alluminium plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on N terminal, and then on Lterminal the terminal plate (fig.2)

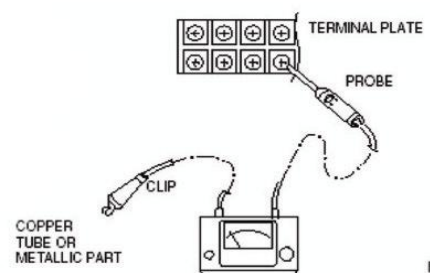


Fig. 2

### c) Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the disired electric part from terminal plate, PCB assy, capacitor, etc. Similary disconnect the connector. Then measure the insulation resistance (fig.1 to 4).

Refer to electric wiring diagram.

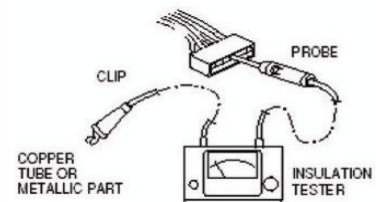


Fig. 3

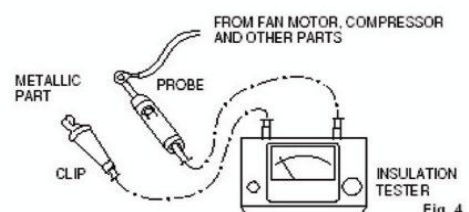


Fig. 4

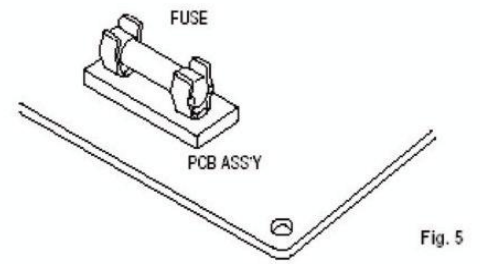
### NOTE

If the probe cannot enter the poles because the hole is too narrow then use a probe with a thinner pin.

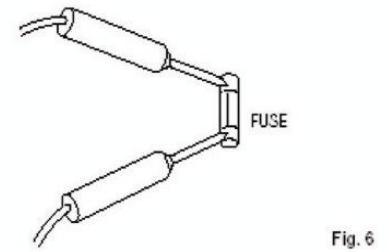
## 6-2 Checking Continuity of fuse on PCB assy

Remove PCB assy from electrical component box (fig.5)

Then pull out the fuse from PCB assy



Check continuity of fuse by the multimeter (fig.6)





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